

REMARKS

Claims 21-40 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for the reasons noted in the official action. The rejected claims are accordingly amended, by the above claim amendments, and the presently pending claims are now believed to particularly point out and distinctly claim the subject matter regarded as the invention, thereby overcoming all of the raised § 112, second paragraph, rejections. The entered claim amendments are directed solely at overcoming the raised indefiniteness rejection(s) and are not directed at distinguishing the present invention from the art of record in this case.

Claims 21-40 are rejected, under 35 U.S.C. § 102(b), as being anticipated by Pontbriand '287 (U.S. Patent No. 3,519,287). The Applicant acknowledges and respectfully traverses the raised anticipatory rejection in view of the following remarks.

Pontbriand '287 relates to a trailer stabilizer connection which couples a trailer to a tow car and arguably damps yaw movements when the tow car tows the trailer along a curved path. This stabilizer connection comprises a connecting plate 10, which is fastened to the trailer and sandwiched, under resilient pressure, between two pressure (friction) plates 14, 16. The pressure on the connecting plate 10 from the pressure plates 14, 16 works to reduce rotation between the connecting plate 10 and the pressure plates 14, 16 are adapted to rotate together relative to the connecting plate 10.

A coupling shaft 24, on which operate the pulling forces during towing, is provided through the two pressure plates 14, 16 and the connecting plate 10 such that the pressure plates 14, 16 and the connecting plate 10 pivot about this shaft 24 for yaw movements.

The pressure plates 14, 16 are connected to the tow car by a hinge comprising a cylindrical pin 44, transverse to the car and the trailer, which passes through a set of vertically elongated rings (slots) 38, 40 alternatively fixed to the tow car or the trailer. The shaft 24 passes through the elongated rings 38, 40 so as to loosely couple the tow car and the trailer. The play between the elongated rings 38, 40 arguably allows for rolling and pitching movements between the tow car and the trailer.

It should be noted that all of the elements of the Pontbriand '287 trailer stabilizer connection are open to the environment and are susceptible to corrosion and wear from rain or water splashed from the road surface, as well as sand, dirt or other debris.

It is respectfully submitted that the presently claimed invention is distinct from the trailer stabilizer connection taught by Pontbriand '287 for a number of reasons. The claims of the application are drawn to an articulating coupling for a vehicle assembly formed of a motor vehicle and a trailer for damping yaw movements. The articulating coupling comprise two different articulations, namely, a first pivot articulation for yaw movements only and a separate second articulation for both rolling and pitching movements. This second articulation transmits all yaw movements to the first articulation without play.

The axis of yaw movement is thus completely disconnected from both the rolling movement axis and the pitching movement axis. This means that the three axes are no longer secant at the same point, contrarily to what happens in a classic single global articulation for the three different movements. The first pivot articulation for yaw movements comprises at least one pivoting disc for damping yaw movements of the trailer.

According to another feature of the invention, the first pivot articulation for yaw movements is housed within a closed space and which protects the first pivot articulation from the environment. As explained in the introduction portion of the specification, an object of the invention is to provide a yaw movement damping device which is efficient, not cumbersome and requires extremely limited maintenance, e.g., preferentially no maintenance during its entire lifespan. To achieve this goal, important things must be done to avoid, as much as possible, wear of friction surfaces.

For that reason, the yaw movement damping device is housed within a closed space so as to protect the yaw movement damping device from debris and pollution located in the environment as well as an attack by liquid, oily substances and abrasive materials such as sand, gravel, etc. It is respectfully submitted that such protection by the housing greatly reduces normal wear of the friction surfaces.

To solve the overcrowding problem in this area, this damping device is integrated inside the articulating coupling assembly without increasing its size. Further, the uncoupling or

disconnection of the yaw movement axis, on one hand, and the rolling and pitching movement axes, on the other hand, and the integral transmission of yaw movements, without any play, from the rolling and the pitching movement articulation to the yaw movement articulation, ensure that the resulting friction remains constantly planar and even in the damping device.

Thus, the resulting friction of the claimed coupling happens under the best conditions, that is without any interfering forces on the friction surfaces, and the efficiency of damping the yaw movement is maximized and the wear is greatly reduced. The specification discloses several possible ways for suppressing the play in the articulating coupling assembly.

In the stabilizer connection taught by Pontbriand '287 the pivot articulation for yaw movements is made of the connecting plate 10 and the two pivoting pressure plates 14, 16, and the rolling and pitching movement articulation is realized with the hinge which comprises the cylindrical pin 44 passing through the set of vertically elongated rings (slots) 38, 40. Contrary to the presently claimed invention, the pivot articulation for yaw movements of the stabilizer connection taught by Pontbriand '287 is free and exposed to the external environment. That is, the articulation of Pontbriand '287 is not in any way "housed within a closed space protected from incoming pollution," as with the presently claimed invention.

Further, as noted above, there must be sufficient play, in the Pontbriand '287 connection, between the cylindrical pin 44 and the interior walls of the elongated rings 38, 40 of the hinge to allow for rolling and pitching movements to occur. It is respectfully submitted that this play is absolutely necessary for the hinge to function properly. As a consequence of this play, there is also a certain amount of play in the hinge for yaw movements.

So, contrary to the presently claimed invention, it is respectfully submitted that the Pontbriand '287 connection (rolling and pitching movement articulation) does not transmit yaw movements without play to the yaw movement articulation.

In further distinction, the Pontbriand '287 connection has a different design and operates in a different manner from the presently claimed articulating coupling. It is respectfully submitted that the objectives of the Pontbriand '287 connection are also different from the claims of the application.

Pontbriand '287 fails to teach any sort of means for limiting wear or overcrowding. As such, it is respectfully submitted that the Pontbriand '287 connection normally requires frequent maintenance and is needlessly cumbersome, which is contrary to the objectives of the claimed invention. Further, Pontbriand '287's yaw movement articulation is not housed within a closed space or protected from incoming pollution and the negative effects caused by abrasive materials. This results in unnecessarily premature and uneven wear of friction surfaces and, if damaged, increases the risk of failure for this articulation.

Even if a person skilled in the art were to attempt to protect the yaw movement articulation of Pontbriand '287 by adding a closed protective enclosure around the articulation, it is respectfully submitted that this would result in an even more cumbersome device and not the compact device, as presently claimed. The Applicant respectfully submits that it would not be obvious to person skilled in the art to integrate the damping device in the coupling hook to protect it without increasing the size of the articulating coupling assembly as claimed in the application.

Further, according to the Pontbriand '287 reference, yaw movements are not transmitted without play from the rolling and pitching movement articulation to the yaw movement articulation. It is respectfully submitted that there is a structural play in the rolling and pitching movement articulation. This play leads to reduction in efficiency of the damping device and leads to non-plane friction and a significant increase of wear. Furthermore, this play is necessary to ensure correct functioning of the hinge. The play can not be suppressed without changing the design and operation of the hinge and thus the working principle of the Pontbriand '287 connection. The Applicant contends that it would absolutely not be obvious to modify the Pontbriand '287 articulation in order to suppress the play.

It should be noted that the play in the hinge and the vertical motion of the cylindrical pin in the elongated rings generate noise, vibration and wear. This play and vertical motion of the cylindrical pin can not be limited either because the elongated rings must have a sufficient height to allow for rolling movement during which the cylindrical pin is inclined in the elongated rings.

In order to emphasize the above noted distinctions between the presently claimed invention and the applied art, the independent claims of this application now recite the features of "a first pivot articulation (12)....being housed within a closed space which is protected from incoming pollution, and a second articulation (21), which allows both rolling and pitching movement and transmits the yaw movement between the motor vehicle (1) and the trailer (2) to the first pivot articulation without play, a first axle enabling the yaw movement between the motor vehicle (1) and the trailer (2) is completely disconnected from other axles so as to facilitate the rolling and pitching movement". Such features are believed to clearly and patentably distinguish the presently claimed invention from all of the art of record, including the applied art.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejections should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejections or applicability of the Pontbriand '287 reference, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

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Respectfully submitted,


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